



European Crane Fly Control and Lawn Care

Alaska Region

Did you know?

- Using some pesticides, such as diazinon and chlorpyrifos (Dursban), to control crane fly larvae may cause bird kills.
- Use of such pesticides has caused bird kills in Sitka, AK, Seattle, WA, and other parts of the western U.S. and Canada.
- More than 100 species of birds are known to feed on crane fly larvae.
- Pesticides are not necessary to reduce crane fly populations.

Pesticide use to control European crane fly larvae in lawns has resulted in migratory bird deaths in Southeast Alaska and other coastal communities in the western U.S. and Canada. In an attempt to prevent additional bird deaths, we are providing the following information to homeowners who maintain lawns.

European Crane Fly

The European crane fly, *Tipula paludosa*, is a species not native to the United States. It is an introduced species that feeds on grass roots and can be a pest in turf. Other crane fly species are native to the U.S., and these insects are not considered threats to lawns. In fact, they serve a beneficial role by speeding the decomposition of organic matter.

The crane fly life cycle spans approximately one year with the following life stages: egg - larva - pupa - adult. The larval stage is the longest in the life cycle and lasts approximately 10 months.

European crane fly larvae often are called leatherjackets because of their thick, greyish colored skin. They hatch in late summer and cause damage to grass by feeding on grass roots and stems through the winter and into the

following spring. Cold winters with little snow cover can result in heavy larvae mortality. Besides the damage done to lawns by crane fly larvae, birds, such as ravens, may feed on the larvae, and through digging and pecking, the birds also may cause significant damage to lawns.

In May-June, leatherjackets stop feeding, make a cocoon and become pupae. In July-August, the pupae emerge as adults, and within 24 hours the adults swarm, breed and die after laying between 200 to 500 eggs in grass.

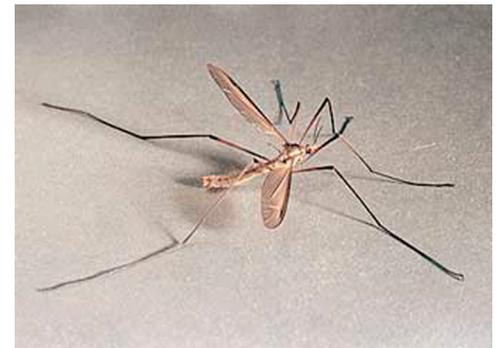


European crane fly larva - leatherjacket (can be over 1 inch long). Ken Gray, courtesy of Oregon State University

How to Determine Larvae Numbers

Crane fly outbreaks are not consistent from year to year. If European crane fly larvae are suspected to be present in a lawn, the homeowner can monitor the insect population in the turf starting in early April.

Select 4 to 5 locations scattered throughout the lawn and cut 6-inch by 6-inch squares about 1 to 2 inches deep. Remove the cut pieces and soak each piece in mild soapy water. This will cause the larvae to float to the surface. Count the number of larvae present in the piece of turf and multiply the number by 4 to give the number of larvae per square foot.



Adult European crane flies look like mosquitoes, but neither feed nor sting (total length can be over 4 inches). Ken Gray, courtesy of Oregon State University

Lawns with less than 15 larvae per square foot need no control. When greater than 25 larvae per square foot are present, control is recommended because turf damage is likely to occur. At 55 crane fly larvae per square foot, control is essential to maintain a healthy lawn. Several options exist for control of crane fly larvae, including biological control organisms, organic pesticides and synthetic pesticides. However, the best strategy for controlling European crane flies is to maintain healthy turf.

Maintain Healthy Turf

Generally, European crane flies are found in greater numbers in poorly established, unhealthy turf. The best strategy for controlling European crane flies is to maintain healthy turf. Soil and water management, as well as selecting grass varieties such as fescue and bluegrass that are adapted to the local environment, are critical elements for healthy lawns.

Manage Soil pH

Test the soil pH in the fall, and at that time, add agricultural or dolomite lime as needed to achieve a soil pH between



European crane fly eggs (approximately 1 mm long). Ken Gray, courtesy of Oregon State University

6.0 and 6.5. Never apply quick lime to lawns or gardens.

Soil Fertility Management

Manage soil fertility by applying a balanced nutrient source consisting of nitrogen, phosphorus and potassium (N-P-K). These nutrients are most easily obtained in the form of a slow-release fertilizer that is applied in May and again in late August. Do not apply when soil temperatures are below 55°F. Organic nutrient sources should be applied in the fall to slowly decompose over the winter.

While the amount of fertilizer applied will vary according to the source and ratio of the nutrients, approximately 3 pounds of actual N-P-K should be applied per 1,000 square feet per year. Always read and follow the fertilizer manufacturer's instructions. Improperly applied fertilizer can pollute streams and actually damage the grass.

Mulching lawn mowers are recommended. These mowers chop the clippings into small pieces, which will slowly decompose and add nutrients back into the lawn. Keep in mind that Southeast Alaska's cool, wet summers will greatly slow the decomposition of such clippings.

Thatch is the buildup of clippings, dead surface roots and other organic debris. This will impede soil drainage and reduce adequate soil fertility. Thatch can be removed by using a hand or mechanical thatcher in the spring or early fall. Thatching also increases soil aeration.

Water Management

Grass roots need oxygen to enable uptake of water and nutrients. In Southeast Alaska, excessive soil water in lawns can be managed by subsurface drainage. Applying a top-dressing of sand and improving drainage around the perimeter of the lawn will also assist in soil drainage. Mechanical aeration of lawns by plugging the turf assists in both soil aeration and soil nutrient movement. Turf plugs can be left on the

surface to incorporate back into the lawn.

Alternative Landscaping

There are alternatives to lawns including ground covers that use either native plants or other landscaping species, low-growing shrubs and ferns.

Biological Control Organisms

Biological control uses living microorganisms, such as nematodes, to attack the crane flies. Nematodes are microscopic worm-like creatures. While some nematodes are considered to be pests, many nematode species attack and feed on soil-dwelling organisms, such as crane fly larvae. For the most effective control of crane flies in cool spring soils, look for a product containing either *Heterorhabditis* (sp.) or the cold-hardy strains of *Steinernema* (sp.) nematode. These species usually require soil temperatures above 55°F and moist conditions. Nematodes are living organisms which must be handled carefully and applied at the right environmental conditions or they will die.

Pesticides

Pesticides are products used to kill, control or mitigate pests and are registered by the U.S. Environmental Protection Agency (EPA). In the past, pesticide application was often the first recommended control strategy for pest management. We now know that pesticides may contaminate the environment, kill beneficial organisms that attack the pest and even kill non-target organisms, such as birds. It is against federal law, as enforced by the EPA, and state law, as enforced by the Alaska Department of Environmental Conservation, to allow a pesticide to injure or kill non-target organisms, including birds and fish.

Two pesticides previously registered for use to control European crane fly larvae are diazinon and chlorpyrifos (Dursban). Dursban no longer will

be registered for home lawn care after December 2001, and diazinon no longer will be registered for home lawn use after 2004. These insecticides are very toxic to birds, and documented bird kills from these products have been reported in Sitka, AK, Seattle, WA, and other parts of the U.S. and Canada. Additionally, both of these pesticides are known to be toxic to fish and other aquatic organisms.

Pesticide alternatives to Dursban and diazinon to control crane flies are limited. Alternatives include restricted use pesticides, which only can be applied by a certified applicator, or general use insecticides known to kill bees and other beneficial and non-target organisms, such as fish. Always be sure the crane fly larvae population exceeds 45 per square foot of turf before considering pesticide use, and do not use pesticides in late summer.

If Using Pesticides:

- Always read and follow the pesticide label for proper mixture and application procedures. The label must specifically allow the use of the pesticide on residential lawns.
- Never exceed the pesticide application rate, as listed on the pesticide label.
- If a granular form of the pesticide is used, it should be watered immediately to prevent birds from ingesting the granules.
- Never use micro-encapsulated pesticides on lawns.



*European crane fly adult (not to scale).
Courtesy of Oregon State University*

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1 800/344 WILD
<http://www.fws.gov>

For more information please contact:
Deborah Rudis
U.S. Fish & Wildlife Service
3000 Vintage Boulevard #201
Juneau, Alaska 99801
907/586 7648
deborah_rudis@fws.gov
or
Bob Gorman
Alaska Cooperative Extension
University of Alaska Fairbanks
907/786 6323 or toll free 1 877/482 3223

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